

What is claimed is:

1. A fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said fuel cell system further comprising:

a humidifier for humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; and

an oxygen-containing gas flow rate controller for controlling a flow rate of said oxygen-containing gas supplied to said cathode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%.

2. A fuel cell system according to claim 1, further comprising a humidity sensor for detecting humidity of said hydrogen-containing gas.

3. A fuel cell system according to claim 2, further comprising a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode, wherein said humidity sensor is disposed in said circulation passage.

4. A fuel cell system according to claim 1, further comprising:

a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and

a hydrogen-containing gas flow rate controller,

5 wherein said oxygen-containing gas flow rate controller controls a flow rate of said oxygen-containing gas supplied to said cathode and said hydrogen-containing gas flow rate controller controls a flow rate of said hydrogen-containing gas supplied to said anode such that humidity of said
10 hydrogen-containing gas is maintained within a predetermined range less than 100%.

5. A fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is
15 supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said fuel cell system further comprising:

a humidifier for humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; and

20 a switching valve;

a bypass passage as a passage of said oxygen-containing gas bypassing said humidifier; and

a valve controller for controlling said switching valve such that said oxygen-containing gas selectively passes
25 through said humidifier and said bypass passage, for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%.

6. A fuel cell system according to claim 5, further comprising a humidity sensor for detecting humidity of said hydrogen-containing gas, wherein said valve controller controls a flow rate of said oxygen-containing gas passing through said humidifier or said bypass passage for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%.

7. A fuel cell system according to claim 6, further comprising a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode, wherein said humidity sensor is disposed in said circulation passage.

8. A fuel cell system according to claim 5, wherein further comprising:

a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and

a hydrogen-containing gas flow rate controller for controlling a flow rate of said hydrogen-containing gas circulating through said circulation passage,

wherein said valve controller controls a flow rate of said oxygen-containing gas supplied to said cathode and said hydrogen-containing gas flow rate controller controls a flow rate of said hydrogen-containing gas supplied to said anode such that humidity of said hydrogen-containing gas is

maintained within a predetermined range less than 100%.